were divided into three groups - Current Smoker, Ex-Smoker and Non-Smoker. Data was obtained for spirometry results, number of hospital admissions with asthma in the preceding year, Asthma Quality of Life Questionnaire (AQLQ), Asthma Control Test (ACT) and British Thoracic Society (BTS) Step in Asthma Management.

Results See Table 1. The majority of the patients attending the asthma clinic were non-smokers 62/92 (72%), and only 9/92 (10%) were current smokers. Baseline characteristics were similar in all three groups. There were significant differences in $FEV_1\%$ (p < 0.05) and FEV1/FVC ratio (p < 0.01) among the groups, despite no statistical difference in the absolute FEV_1, absolute FVC and FVC%. Interestingly, the groups were similar in terms of number of hospital admissions with asthma in the preceding year, AQLQ score, ACT score and BTS step in Asthma Management.

Conclusions The proportion of smokers attending our asthma clinic is half that in the wider asthma population[1]. Smokers with asthma have lower FEV_1 as a% of predicted and FEV_1/FVC ratio than non-smokers. There were, however, no differences in other spirometric parameters, the number of hospital admissions with asthma in the preceding year, AQLQ score, ACT score and BTS step in asthma management. Smoking cessation may result in subsequent improvements in asthma control and quality of life without the need for escalating treatment.

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Respiratory interventional procedures

21G VS 22G EBUS-TBNA NEEDLE SAMPLING AND CELL MORPHOLOGY OF THE CORE BIOPSIES AND NEEDLE WASHINGS: IS BIGGER BETTER?

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Introduction EBUS-TBNA has avoided the need for patients to undergo mediastinoscopy and can be done under conscious sedation with minimal complications for mediastinal lymph node sampling for lung cancer. The sample analysis varies depending on local expertice.
Objective

1. To compare histology (core biopsy) vs. needle washing cytology in achieving a diagnosis of malignancy.

2. Comparing biopsy results using 21G and 22G EBUS-TBNA needles.

Methods We reviewed all EBUS procedures performed at Glenfield Hospital, UK from 11 June 2008 till 24 April 2013. The results were then filtered to exclude the 1st 10 procedures in view of the learning curve in performing the procedure and EBUS from 1 January 2010–31 December 2010 (period when the EBUS-TBNA needles were changed from 22G to 21G). Only confirmed diagnosis of malignancy from the remainder were analysed for the study.

Results 543 EBUS procedures were done in the 2 periods of which 234 yielded a diagnosis of malignancy (69 and 165 respectively). 68% of 22G needle core samples provided cell type morphology vs. 87% using the 21G needle. Needle washing only provided cell typing in 30% and 28%.

The main cell types for the core biopsies were squamous cell carcinoma (19), adenocarcinoma (14) and small cell carcinoma (10) and in the 21G study adenocarcinoma (47), small cell carcinoma (34) and squamous cell carcinoma (28).

Summary The results show that switching from 22G to 21G EBUS-TBNA needles yielded a better diagnostic result in this study. Diagnosis based on cell types were also better using the 21G needles. Core biopsies gave better results compared to cytology from needle washings.

Potentially depending on local practices we could consider performing diagnostic sampling analysis on needle core biopsies only and 21G EBUS-TBNA needles gave a better diagnostic yield.

ADEQUACY OF 22 AND 21 GAUGE EBUS-TBNA HISTOLOGY SAMPLES FOR GENOTYPING OF PRIMARY LUNG ADENOCARCINOMA

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Introduction Epidermal growth factor receptor (EGFR) gene mutations in non-small cell lung cancer have been shown to confer improved responsiveness to tyrosine kinase inhibitors. NICE recommends tyrosine kinase inhibitors as first line therapy in patients with locally advanced or metastatic tumours with EGFR gene mutations. Evidence from a multicentre retrospective study of 119 patients undergoing EBUS-TBNA to obtain cell block samples showed that EGFR mutation analysis was possible in 89.9% (107/119)[1]. Similar results 32/36 (88.8%) have been observed in a smaller more recent study[2]. The aim of this single centre prospective study was to evaluate the adequacy of EBUS-

Abstract M10 Table 1.

	1st Period (17.9.2008–31.12.2009)–22G Needle	2nd Period (2.1.2011–23.4.2013)–21G Needle
Total EBUS Procedures	122	413
Diagnosis of malignancy	69	165
Both histo/cyto same cell types(include NSCC)	29(42%)	39(24%)
Needle core histology confirm cell type (excl NSCC)	47(68%)	144(87%)
Needle core histology with cell type morphology (incl NSCC)	63(91%)	154(93%)
Needle washing cytology with cell type morphology (excl NSCC)	20(30%)	46(28%)
Needle washing cytology with cell type morphology (incl NSCC)	52(80%)	121(73%)

TBNA histology specimens using both 21G and 22G needles in confirmed primary lung adenocarcinoma.

Methods A prospective analysis was performed on 250 consecutive patients undergoing EBUS-TBNA between 2009 and 2013. 21G or 22G needles (Olympus ViziShot, NA-201SX-4021 and NA-201SX-4022) were used by operator discretion. A minimum of 2 passes were carried out per nodal station. Samples were fixed in formalin and prepared for histopathological analysis. The proportion of confirmed primary lung adenocarcinoma samples in which EGFR mutation testing was feasible was determined.

Results Primary lung adenocarcinoma was confirmed in 45 patients (18%). EGFR mutation analysis was attempted in 35 of these patients and was possible in 34 (97.1%). EGFR mutation was present in 3 patients (8.8%).

Conclusions This single centre study demonstrates both 22G and 21G EBUS-TBNA samples are adequate for EGFR mutation analysis with no clear superiority in contrast to recent data suggesting disease phenotyping may be superior using a 21G needle when analysed by histopathology. We speculate that higher sample usability rates for mutation analysis may have been facilitated by the use of histological specimens however further larger studies are required to confirm this hypothesis.

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M12 EBUS- ARE TWO NEEDLES BETTER THAN ONE?

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Introduction The introduction of endobronchial ultrasound has allowed visual sampling of nodes compared to the previous blind TBNA techniques. It was widely been used for patients with suspected lung. The purpose of our current study was to evaluate the usefulness of using a 2 needle technique compared to a single needle method in ebus sampling. The primary endpoint was to see the effect on the total number of biopsy passes, time between needle exchange and also total time taken to complete an ebus procedure.

Method 20 patients with mediastinal and hilar lymphadenopathy or suspected lung cancer in our institution were included in this prospective study. EBUS-TBNA was performed in all cases. 10 procedures were used using a 2 needle technique and 10 procedures were performed with single needle. Two trained bronchoscopists with 2 trained nurses performing the needle exchange and on site cytopathologist were present at the bronchoscopy giving an instant preliminary diagnosis.

Equal numbers of procedures were performed by each of the operators.

Results EBUS-TBNA was successfully performed in all 20 patients recruited. In the single needle technique the average number biopsy passes performed was 3.8 per ebus with an average needle changeover delay of 2 minutes 21 seconds and an average ebus time of 27 minutes. The two needle technique showed a greater number biopsy passes of 4.4 per ebus with a significantly reduced changeover needle time delay of 18 seconds per changeover and a reduction in overall ebus time to 21

minutes per procedure. All the procedures were uneventful without complications. All sample were labelled adequate by the histocytopathologist.

Abstract M12 Table 1. Results.

	2 needle technique	Single technique
Average number of biopsy passes per ebus	4.4(10)	3.8 (10)
Needle changeover delay (minutes)	18 seconds	2 minute 21 secs
Total ebus time (minutes)	21 minutes	27 minutes
Complications	0	0
Adequacy	100.00%	100.00%

Conclusions Although the numbers performed in the study are small, there is enough evidence from our data to show a significant benefit in a 2 needle technique with a greater number of biopsy passes performed, reduced delay in needle changeover time and reduction in ebus procedure time. This is both beneficial to the patient with a reduced procedure time but also with a potential cost benefit if more procedures can be performed safely in a shorter time period.

M13 OUTPATIENT ULTRASOUND-GUIDED FINE-NEEDLE ASPIRATION OF SUPRACLAVICULAR LYMPH NODES, PERFORMED BY CHEST PHYSICIANS FOR DIAGNOSIS AND STAGING OF LUNG CANCER

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Introduction and Objectives Supraclavicular fossa (SCF) lymph node metastases are detectable in almost half of lung cancer patients where mediastinal lymphadenopathy is present (1). They represent N3 disease, not amenable to radical treatment. Ultrasound guided fine needle aspiration cytology (US-FNAC) is a sensitive test in this setting. We explored the accuracy of outpatient US-FNAC of SCF nodes performed by respiratory physicians.

Methods Outpatients with suspected lung cancer were selected for US guided FNAC of SCF lymph nodes if they had one or more of:

1. Enlarged SCF lymph nodes on CT scanning 2. Palpable supraclavicular lymph nodes 3. Visible non-enlarged SCF lymph nodes on CT with associated mediastinal lymphadenopathy.

After informed consent, the SCF was scanned with the patient semi-recumbent, using a Sonosite US with 13.6MHz linear probe, by MGS, or RA supervised by MGS, a level-2 non-radiologist US practitioner. Real-time US-FNAC was performed using a 21G or 19G needle and the capillary aspiration technique. Three passes were made and cores were put into a cytology fixative (Cytolyt).

Results 14 patients (male = 8, median age 67.5 years) underwent US-FNAC. The median short-axis diameter of the target node was 11.5 mm (range 5–25 mm). A positive malignant diagnosis was obtained in 11/14 patients (78.6%), (adenocarcinoma n = 6, small cell lung cancer n = 4, non-small cell lung cancer n = 1), and all four sub-centimetre nodes gave positive results. There were two false-negatives (14.3%) on an intention-to-diagnose basis, in one of whom no specimen could be obtained. One sample was non-diagnostic. All patients found the procedure easy to tolerate and there were no complications.